1974 *Report and Order* establishing the MDS.[41/] The current trend towards providing licensees with increased flexibility in their use of spectrum can be traced to that 1974 decision. In describing the potential uses of MDS facilities, Commission stated that "[t]he intelligence which is transmitted . . . may consist of private television, *high speed computer data*, facsimile, control information, *or other communications capable of radio transmission.*"[42/] Since then, the Commission has consistently recognized that MDS licensees enjoy the flexibility to provide a variety of video and non-video services, subject only to compliance with, or the receipt of a waiver of, the Commission's technical rules.[43/] As a

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[41/] *Amendment of Parts 1, 2, 21 and 43 of the Commission's Rules and Regulations to Provide for Licensing and Regulation of Common Carrier Radio Stations in the Multipoint Distribution Service*, 45 F.C.C.2d 616, 617 (1974).

[42/] *Id.* at 617 (1974)(emphasis added). Interestingly enough, the Commission also foreshadowed the use of telephone return links when it stated that "[t]he transmission is one-way in that the audience cannot use the system to respond to the communications, *although return voice communications may be obtained by simultaneous use of telephone lines.*" *Id.* Although in 1974 microwave return links were not authorized, as discussed *infra* at 24, the Commission subsequently provide MDS licensees with access to various microwave return links for use in addition to telephone return links.

[43/] *See, e.g., Amendment of Parts 21 and 74 of the Commission's Rules With Regard To Filing Procedures In The Multipoint Distribution Service and In The Instructional Television Fixed Service*, 10 FCC Rcd 13821, 13825 (1995)[hereinafter cited as "*MDS Auction Reconsideration Order*"]("We will allow alternative uses other than wireless cable video transmission if the applicant can satisfy MDS technical rules or adequately support waivers of those rules."); *MDS Auction Order*, 10 FCC Rcd at 9619 (recognizing that the Commission's Rules "permit use of MDS frequencies for other kinds of services [than wireless cable]" and "emphasiz[ing] that nothing in this *Report and Order* precludes either new licensees or incumbents from using MDS frequencies for other [non-video] kinds of services."); *Revisions to Part 21 of the Commission's Rules*, 2 FCC Rcd 4251, 4255 (1987)("We believe a similar flexible approach is particularly appropriate to MDS . . . In the non-entertainment market, MDS may compete with short-haul microwave, coaxial cable, Digital Termination Systems, fiber optic cable and fixed satellites."); *Application for*

result, Section 21.903(b) of the Commission's Rules has always provided that an MDS station may be used for "any kind of communications service."[44/] The recent authorization of two-way MDS services in the Boston area merely confirmed that MDS channels can be used for more than just point-to-multipoint distribution of video entertainment programming.

Just recently, the Mass Media Bureau's *Internet Public Notice* confirmed that leased ITFS frequencies (as well as MDS channels) can be employed for asymmetrical high speed digital data applications, including Internet access, providing that the usage comports with the Commission's technical rules and the *Digital Declaratory Ruling*. That came as no surprise, for the Bureau had previously ruled that ITFS licensees may employ their channels for full time Internet access, and had recognized that where such usage is in connection with courses offered for academic credit, it satisfies an ITFS licensee's educational programming obligations under Sections 74.931 (a) and (e).[45/]

Transfer of Control; Arthur Lipper Corporation and Tymshare Inc., 85 F.C.C.2d 1023, 1042-43 (1980) (acquisition of largest MDS licensee by data communications carrier is approved by FCC on the grounds that "the development of new, innovative types of service was the Commission's intention when it allocated spectrum for MDS," that "RF technology may well play an increasingly important role in local, data-oriented, telecommunications transmission service in the future," and that the merger "should provide the applicants and improved opportunity to explore a variety of alternative uses for MDS service.").

[44/] 47 C.F.R. §21.903(b).

[45/] *See* Letter to George Washington University and Hybrid Network, Inc. from Barbara A. Kreisman, Chief, Video Services Division (dated Feb. 26, 1994).

2. The Commission's Rules Authorize MDS and ITFS Licensees To Utilize Microwave Spectrum For Return Paths.

Similarly, the Commission should recognize that its Rules already provide MDS and ITFS licensees with spectrum for the provision of two-way services. Since 1969, ITFS licensees have been provided with one 125 kHz response channel for each 6 MHz primary channel licensed.[46/] Similarly, MDS licensees in the 2596-2644 MHz band have long been provided with access to 125 kHz response channels.[47/] And, for the benefit of all MDS licensees, the Commission's rules provide that "point-to-point radio return links from a subscriber's location to a MDS operator's facilities may be authorized in the 18,580 through 18,820 MHz and 18,920 through 19,160 MHz bands."[48/] Indeed, the Commission recently recognized that wireless cable system operators will need to provide microwave transmission

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[46/] 47 C.F.R. §74.939. *See Amendment of Part 74, Subpart I of the Commission's Rules and Regulations Governing Instructional Television Fixed Stations to Provide for the Licensing of ITFS Response Stations in the Band 2686-2690 Mc/s*, 16 R.R.2d 1584 (P&F 1969)(allocating spectrum for ITFS response channels).

[47/] 47 C.F.R. §21.901(b)(4), (5). H channel licensees were first provided with access to response channels in 1971, when the H channels were formally reallocated from the ITFS to the Operational Fixed Service. *See Amendment of Parts 2 and 74 of the Commission's rules and Regulations to Establish a New Class of Educational Television Service for the Transmission of Instructional and Cultural Material to Multiple Receiving Locations on Channels in the 2500-2690 MHz Frequency Band*, 30 F.C.C.2d 197, 200 (1971). In 1991, however, the Commission allocated the 125 kHz response channels associated with the H channels and MDS channels E3, E4, F3, and F4 for Private Operational Fixed Service use. *See Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands*, 6 FCC Rcd 6792, 6795 (1991).

[48/] 47 C.F.R. §21.903(a). *See Establishment of a Spectrum Utilization Policy for the Fixed and Mobile Services Use of Certain Bands Between 947 MHz and 40 GHz*, 56 R.R.2d 1171, 1181 (1984)[hereinafter cited as "*MDS Return Path Allocation Order*"].

capability from subscribers' premises in order to provide Internet access and other interactive services, and preempted local restrictions that would have improperly restricted the installation of wireless cable reception antennas also capable of providing transmission capability.[49/]

3. The Current Allocation Of Spectrum And Licensing Procedures For Microwave Return Paths Does Not Accommodate Current Needs.

Although the Commission currently makes spectrum available for MDS and ITFS return paths, that spectrum is of insufficient quantity, is improperly channelized and is licensed in a manner that is not commercially viable to meet the growing needs of the wireless cable industry and America's educational community for high-speed interactive services. The available options simply have proven inadequate to meet contemporary needs. By adopting the proposed rules and allowing MDS and ITFS licensees to turn around a portion of their 6 MHz channels for communications from receive sites, the Commission can provide a vehicle for meeting those needs, without having to engage in a time-consuming and contentious reallocation of additional spectrum for MDS and ITFS return paths.

[49/] *Preemption of Local Zoning Regulation of Satellite Earth Stations and Implementation of Section 207 of the Telecommunications Act of 1996: Restrictions on Over-the-Air Reception Devices: Television Broadcast and Multichannel Multipoint Distribution Service*, IB Docket No. 95-59 and CS Docket No. 96-83, FCC 96-328 at ¶ 39 (rel. Aug. 6, 1996). Because it may be necessary to utilize separate transmission and reception antennas on subscribers' premises in order to provide two-way services, WCA, Bell Atlantic Corporation, CAI, CS Wireless Systems, Inc., National Wireless Holdings, Inc., NYNEX Corporation, Pacific Telesis and PCTV have petitioned the Commission to reconsider, among other things, that portion of the decision that refused to extend preemption to those antennas mounted at subscribers' premises that only transmit signals. That petition for reconsideration remains pending.

Even if they could be accumulated for use by one system operator, the twenty-four 125 kHz response channels available through MDS and ITFS licensees do not provide sufficient channel capacity to meet most two-way needs. Moreover, those channels are licensed using an awkward interleaved plan that makes it impossible for a single licensee to secure continuous channels. And, since the 1991 reallocation of the response channels previously available to the licensee of MDS channels E3, E4, F3 and F4,[50/] it is impossible for a single operator to assemble a contiguous band.

Similarly, the 18 GHz band return links available to MDS licensees are impractical for use in a consumer environment. Over the protests of the wireless cable industry, the Commission requires that each and every link located at consumers' premises be individually licensed.[51/] Suffice it to say that the costs associated with the process of coordinating and applying for individual 18 GHz band links, as well as the delay associated with the process, are far greater than consumers would accept. Rather than bear such costs of money and time, consumers would undoubtably opt for competitive services, such as cable, that can provide two-way service at lower cost and without delay. Moreover, because the 18 GHz band is utilized rather extensively in many markets, it will not be available for use by wireless cable system operators to connect with all their subscribers.

[50/] 47 C.F.R. § 27.901(b)(4) and (5).

[51/] *See MDS Return Path Allocation Order*, 56 R.R.2d at 1181("we believe it would be inappropriate to permit un-coordinated operations or to make area-wide assignments of 18 GHz point-to-point spectrum for MDS return links.").

While the Mass Media Bureau has recently authorized the use of MDS channels in the Boston, MA area for the transmission of information from subscriber locations to central cells, it has individually licensed each link.[52/] Thus, the Commission has failed to resolve the fundamental flaw in the 18 GHz return path licensing scheme — consumers simply will not wait for the Commission to individually license each path.

Moreover, the Commission's current approach to the licensing of two-way operations by MDS and ITFS licensees is flawed in that it provides absolutely no protection against interference for return path links. If wireless cable system operators and educational institutions are to make the financial investments necessary to use the MDS and ITFS spectrum for high-speed two-way communications, they must have a reasonable measure of assurance that their investment will be protected against harmful electrical interference. Today, however, the Commission's Rules provide no meaningful protection against interference to return path operations.

The rule revisions proposed in Appendix B are designed to alleviate these flaws in the current regulatory structure by affording MDS and ITFS licensees the flexibility to employ some or all of a 6 MHz channel for return path use, by providing an mechanism by which licensees can secure authority to install response stations without individual Commission approval, and by affording an appropriate level of interference protection to those that do engage in two-way operations.

[52/] *See supra* note 25.

4. In Many Markets, It Will Be Necessary To Cellularize Transmissions In Order To Achieve The Spectral Efficiencies That Two-Way Communications Services Demand.

Regardless of whether telephone lines or microwave channels are employed for return paths, interactive services demand that a significant amount of bandwidth be devoted to the provision of downstream communications to subscribers. Information directed to subscribers will be transmitted using a broadcast architecture under which at least time diversity (and probably other techniques) will be employed to share spectrum among subscribers. For example, the Internet access service currently operating in the Washington, DC area broadcasts to any one subscriber all of the information being requested from the network at any given moment by each and every other subscriber. The subscriber terminal then picks out the information intended for the particular subscriber. An inherent flaw in this architecture is that as more and more subscribers are added to the system, the speed at which information can be relayed to anyone subscriber is reduced. Paradoxically, the more consumers are attracted by the speed of wireless Internet access, the less speed access providers will be able to deliver using a broadcast architecture.

As is discussed in detail in the *Two-Way Report*, while it is anticipated that operators will employ antenna sectorization coupled with cross polarization and frequency diversity in order to secure some measure of frequency reuse,[53/] it is likely that many operators also

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[53/] Antenna sectorization involves replacing the broad beamwidth transmission antenna that most wireless cable system operators employ with a series of narrow beamwidth transmission antennas, each of which is capable of transmitting different information. For example, in tests conducted earlier this year by ATI, PCTV, Zenith Electronics Corp.,

will need to employ a cellularized transmission system in order to gain the additional spectral efficiency needed to meet marketplace demand. As the Commission is well aware, a cellular transmission system results in greater spectral efficiency by permitting frequency reuse through multiplication of the number of transmitters that can originate information.[54/] As Kagan recently noted, "if the combination of cellularizing networks and sectorizing transmitters leads to efficient frequency reuse, it won't be long before [high speed access to data] service becomes a residential business."[55/] The rules proposed in Appendix B are designed to provide MDS and ITFS licensees the ability to cellularize their transmission

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Conifer Corp. and Comwave, it was demonstrated that one can provide 360° coverage with a series of 48 antennas, each of which provides 7.5° coverage. Two sets of frequencies were used, with each antenna using a different frequency band than the adjacent transmission antenna. Such an approach effectively multiplies by 24 the amount of information that can be transmitted downstream to subscribers at any given moment. As reported in *Broadcasting and Cable*,

> the modems demonstrated they were capable of transferring data at speeds of 500 kilobits per second. That's substantially higher than ISDN-enabled telephone line speeds of 128 kbps.

Coleman, "Wireless Modems in the Fast Lane," *Broadcasting and Cable*, at 12 (July 1, 1996).

[54/] *See, e.g., Amendments of Parts 2 and 22 of the Commission's Rules to Permit Liberalization of Technology and Auxiliary Service Offerings in the Domestic Public Cellular Radio Telecommunications Service*, 3 FCC Rcd 86 (1988); *Spectrum Efficiency in the Private Land Mobile Radio Bands in Use Prior to 1968*, 6 FCC Rcd 4126, 4138-39 (1991).

[55/] "Competitive Issues Face Wireless Ops," *Wireless Cable Investor*, at 3 (July 29, 1996)("if the combination of cellularizing networks and sectorizing transmitters leads to efficient frequency reuse, it won't be long before [high speed access to data] service becomes a residential business.").

networks and reuse spectrum, so long as that process does not result in increased interference to neighbors.

5. *Emerging Transmission Techniques Will Require The Use Of Bandwidths Wider And/Or Narrower Than The Current 6 MHz and 125 kHz Channels Available To MDS And ITFS Licensees*

As is discussed in more detail in the *Two-Way Report* and in the explanatory notes to the proposed rule revisions, emerging spectrally-efficient transmission techniques are likely to require the use bandwidths that are wider and/or narrower than the current 6 MHz and 125 kHz channels available to MDS and ITFS licensees. The Petitioners are proposing rules that will allow a licensee to subchannelize its licensed spectrum, and will allow adjacent channel licensees to jointly engage in transmissions with bandwidths in excess of a single channel, subject to compliance rules designed to assure protection of against interference.

C. The Proposed Rules Will Allow MDS And ITFS Licensees To "Turn Around" Some Or All Of Their 6 MHz Channels, To Employ Cellular System Topology And To Employ Channels With Bandwidths Other Than 6 MHz, All Without Causing Harmful Electrical Interference

Appendix B provides the Commission with the specific rule revisions that the Petitioners are proposing, marked to show changes from the current MDS and ITFS rules. Each proposed revision is accompanied by a detailed explanatory note that sets forth the reasons for the specific proposed revisions.

Fundamentally, what the Petitioners are proposing are rule changes that will afford MDS and ITFS licensees the flexibility to use some or all of their 6 MHz channels for return

links from subscribers, to cellularize their transmission systems, and to permit the use of subchannels or superchannels (*i.e.*, the transmission of a single signal over multiple adjacent channels) for digital transmissions in either direction, provided that no harmful electromagnetic interference is caused as a result. In addition, the Petitioners are proposing rules that will provide BTA authorization holders, incumbent MDS licensees and ITFS licensees who take advantage of such flexibility with interference protection akin to that which they are currently provided in point-to-multipoint transmissions. As discussed in more detail in the *Two-Way Report*, recent field tests conducted by HAA and Mr. Weiss in support of this Petition have provided sufficient information that the industry can now recommend rules to the Commission that will permit the introduction of these techniques on MDS and ITFS channels without causing harmful electromagnetic interference.

In order to avoid the need for wholesale changes to the Commission's Rules, the Petitioners are proposing to employ the existing rules governing MDS and ITFS response stations and booster stations (§§ 21.909, 21.913, 74.939 and 74.985) as the basis for rules governing two-way transmissions and cellularization. However, those rules will need to be substantially revised to provide for greater flexibility in the use of response and boosters stations, to assure that the additional flexibility in the use of response and booster stations does not result in harmful electromagnetic interference, and to provide those who take advantage of the additional flexibility with protection against interference caused by subsequent proposals.

The most difficult part of crafting a regulatory environment to achieve these objectives is establishing a methodology for evaluating the potential for harmful electromagnetic interference from multiple subscriber locations transmitting simultaneously. Based on the field tests conducted in Tucson that are reported on in the *Two-Way Report*, the Petitioners are proposing a standard methodology that will allow applicants to demonstrate such non-interference. That methodology is explained in detail in Appendix C to this Petition, which the Petitioners urge the Commission to employ as an attachment to the report and order adopting the proposed rules. The common use of that methodology by industry participants and the Commission alike should serve to provide certainty and minimize disputes.

In crafting the proposed rules, the Petitioners have been mindful of the provisions of the *Digital Declaratory Ruling*. As should be evident, and as is discussed in the *Two-Way Report*, the Petitioners anticipate that virtually all of the new offerings that take advantage of the proposed rules will employ digital modulation. However, but for a few isolated instances, the Petitioners are not here proposing that the interim policies adopted in the *Digital Declaratory Ruling* be incorporated into the Commission's Rules.[56/] Rather, the Petitioners contemplate that the proposed rules will be applied in a manner consistent with

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[56/] The exceptions generally involve the elimination of technical rules (such as §§ 21.907 and 74.950(a) through (e)) that presume the use of NTSC-compatible transmission equipment and are clearly no longer applicable.

the *Digital Declaratory Ruling* until such time as the Commission can adopt permanent rules to govern the use of digital modulation.

Moreover, the rules have been drafted in a manner designed to accommodate future Commission authorization under the policies announced in the *Digital Declaratory Ruling* of digital modulation schemes other than Quadrature Amplitude Modulation ("QAM") and Vestigial Sideband ("VSB"). As is discussed in more detail in the *Two-Way Report* and in the explanatory notes to the proposed rules, the Petitioners anticipate that there will be other modulation techniques employed by the wireless cable industry, particularly for return path use. The *Digital Declaratory Ruling* contemplates that the Commission will authorize the use of other modulation techniques on an interim basis where the proponent can demonstrate that such use will not result in interference.[57] The Petitioners contemplate that the Commission will continue to authorize additional digital modulation schemes for routine MDS and ITFS use, in addition to VSB and QAM, and have drafted the proposed rules to accommodate that use of other modulation schemes.

Admittedly, the proposed rules are complex. The *Two-Way Report* explains how this is largely a reflection of the fact that the MDS and ITFS spectrum is heavily encumbered with proposed and existing facilities that are entitled to varying degrees of interference protection. MDS stations authorized or proposed prior to September 15, 1995 are entitled to protection based on desired-to-undesired signal ratios within their thirty-five mile

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[57] *See Digital Declaratory Ruling*, at ¶ 14 n. 31.

protected service areas, while those authorized afterwards pursuant to BTA authorizations are entitled to protection based on power flux density at the protected service area boundary.[58/] ITFS applicants and licensees that lease excess capacity on their facilities to wireless cable operators are entitled to protection similar to that afforded incumbent MDS facilities, while ITFS stations that are not under lease are entitled to protection solely of registered receive sites.[59/] The Petitioners objective has been to permit each class of licensee increased flexibility in the use of their spectrum, while at the same time providing each with as close as possible to the level of protection currently afforded. Given the complexity of the current regulatory scheme, there is no easy way to achieve the Petitioners' objective and achieve the industry-wide consensus behind this filing, without a measure of complexity.

However, the Petitioners do not contemplate that the Commission's staff often will be required to undertake the complex interference analyses called for under the proposed rules. Given the wide variety of system designs and service offerings contemplated for the MDS and ITFS bands, it is impossible to craft a set of technical rules that will result in optimal spectral efficiency in most cases. As a result, the Petitioners contemplate that neighboring licensees will usually negotiate in good faith as required by §§ 21.902(b)(2), 21.938(a) and 74.903(c) of the Rules and enter into private agreements governing the use of their spectrum, and that such private agreements will supersede the Commission's Rules. Thus, in most cases applicants for response station authorizations and new cells will be

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[58/] *MDS Auction Order*, 10 FCC Rcd at 9591.

[59/] *See* 47 C.F.R. § 74.903.

submitting consents from their neighbors, rather than detailed studies of the potential for interference that would otherwise be required. The proposed rules, in effect, will provide a starting point for negotiations between neighbors, for they will establish what each can do in the absence of the other's consent. Rarely, however, will the proposed rules actually dictate final system designs.

Unfortunately, history has shown that despite the requirements of Sections 21.902(b)(2), 21.938(a) and 74.903(c), MDS and ITFS licensees cannot always agree on the design of adjacent systems. Yet, even in those cases where neighbors do not agree upon system designs, the proposed rules will free the staff from detailed technical analyses in most cases. As explained in more detail in the explanatory notes that accompany the proposed rules, the proposed regulatory structure has been designed to give licensees tremendous flexibility in the design of their technologically advanced systems, so that most will be able to provide enhanced service offerings in at least a portion of their service area without requiring consents.

In order to expedite the initiation of advanced services to the public and avoid the application bottlenecks that have historically plagued wireless cable, the Petitioners contemplate the use of a rolling, one-day filing window system to govern the filing of applications for new or modified response station hubs or boosters. Under the contemplated system, each applicant will be required to demonstrate protection to all facilities proposed prior to the filing of his or her application. Applications filed on the same day would not be entitled to comparative consideration of any sort, but rather would be granted. The

Petitioners contemplate that in cases where closely-spaced facilities are proposed on the same day, the filers will be left to resolve any incompatibilities and the Commission's staff will thereby be freed from having to determine and resolve mutual exclusivity.

In order to further expedite the processing of applications and reduce the burden on staff resources, under the contemplated system applications would be placed on public notice without prior staff review of the accompanying interference studies, and would be automatically granted on the 61st day after that notice unless a petition to deny was filed or the Commission otherwise notified the applicant prior to that date. Thus, the only time the staff will be required to review the complex interference studies would be in those situations where the applicant could not secure consent to its proposal, and a petition to deny is filed. To deter the filing of frivolous petitions to deny, the Commission should reiterate its announcement of a year ago that:

> Our rules prohibit the filing of frivolous pleadings or pleadings filed for the purpose of delay in proceedings before the Commission or its staff. See e.g., 47 C.F.R. § 1.52. The Commission intends to fully utilize its authority to discourage and deter the filing of such pleadings and to impose appropriate sanctions where such pleadings are filed.[60/]

As is explained in the explanatory note to proposed §21.27(d), the petitioners contemplate that a large number of applications for new response station hubs and boosters are likely to be filed once the new rules become effective, and that many of the applications submitted at that time will conflict with others filed simultaneously. In order to smooth the

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[60/] "Commission Takes Tough Measures Against Frivolous Pleadings," *Public Notice*, FCC 96-42 (Feb. 9, 1996).

transition to this rolling one-day filing window application processing system, the Petitioners are proposing that a special one-week window be employed when the new rules first go into effect, and that all applications filed during this window be deemed filed as of the same day.[61/] Following the publication of a public notice announcing the tendering for filing of applications submitted during that window, applicants would have a period of 60 days to amend their applications to resolve conflicts, provided such amendments do not result in any increase in interference to any previously proposed or authorized station (including facilities proposed during the window) absent consent of the applicant for or licensee of the station that would receive such interference. During this 60-day period, no additional applications could be filed, affording those who filed during the one-week window an opportunity to resolve any conflicts without fear that third parties will propose facilities during the pendency of settlement discussions that will have to be protected.

At the conclusion of that 60-day period, it is contemplated that the Commission would publish a public notice announcing the acceptance for filing of all applications submitted during the initial window, as amended during the 60-day period. All petitions to deny such applications would be filed within 60 days of such second public notice. Each application submitted during the initial window would then be automatically granted on the 61st day after the Commission shall have given notice of its acceptance for filing, unless prior

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[61/] The Petitioners contemplate that existing response station use should be grandfathered, and that prior to this one-week filing window the Commission would afford existing response station users an opportunity to file the information necessary for subsequent applicants to provide the requisite interference protection.

to such date either a party in interest timely files a formal petition to deny or the Commission notifies the applicant that its application will not be automatically granted. On the 61st day after the publication of such second public notice, applications for response station hub and booster station hub authorizations would again be accepted and processed under the rolling one-day filing window approach. There is ample precedent for this approach.[62/]

The Petitioners recognize that the filing system they are proposing for response stations and new cells imposes a somewhat greater burden on existing licensees and applicants to monitor filings at the Commission for potential interference, for they will no longer be able to rely solely on the Commission's staff to identify potential interference. However, the Petitioners believe that such increased burden is a reasonable one, particularly since those who take the time to properly engineer applications for response stations and boosters will be able to initiate service more rapidly than under the current system. In addition, this approach will free Commission staff resources to address contested cases, resulting in more rapid decisions when petitions to deny are filed.

[62/] *See Amendment of Parts 1, 21, 22, 74 and 94 of the Commission's Rules to Establish Service and Technical Rules for Government and Non-government Fixed Service Usage of the Frequency Bands 932-935 MHz and 941-944 MHz*, 4 FCC Rcd 2012, 2014 (1989).

D. The Commission Must Revise Its ITFS Channel Loading and Channel Mapping Rules To Accommodate The Investment Necessary To Introduce Two-Way Services For The Benefit of Consumers and Educators.

Other than the Commission's technical rules, the greatest impediments to the introduction of two-way services by wireless cable operators and educators are the Commission's Rules governing ITFS usage. If two-way MDS and ITFS services are to become a reality, the Commission must modify its ITFS usage rules to reflect evolving needs.

Of most immediate concern to the Petitioners is Section 74.931(e)(9) of the Commission's Rules, which provides in pertinent part that:

> A licensee may shift its requisite ITFS programming onto fewer than its authorized number of channels, via channel mapping technology or channel loading, so that it can lease full-time channel capacity to a wireless cable operator, subject to the condition that it provide a total average of at least 20 hours per channel per week of ITFS programming *on its authorized channels.*

(emphasis added). In other words, while this rule grants ITFS licensees the flexibility to free some of their channels for full-time commercial use, it effectively mandates that at least one channel of every four channel groups be used for educational programming.[63/]

[63/] The number of channels that an ITFS licensee can free for full time commercial use is the subject of presently pending petitions seeking reconsideration of the Commission's 1994 decision to consider only programming transmitted for "real time" viewing by students towards the ITFS minimum programming requirements, filed by Alliance for Higher Education, Arizona Board of Regents for Benefit of University of Arizona, South Carolina Educational Television Commission, State of Wisconsin - Educational Communications Board, the University of Maine System and by WCA. *See* Petition of Alliance for Higher Education, *et al*, MM Docket No. 93-106 (filed Aug. 5, 1994); Petition of WCA for Reconsideration and Clarification, MM Docket No. 93-106, at 6-11 (filed Aug. 12, 1994).

Whatever the merit of this requirement when channels are being employed to transmit traditional ITFS video programming, it will be problematic for many wireless cable systems attempting to utilize microwave channels for two-way communications. System developers will attempt to utilize contiguous 6 MHz channels for two-way services in order to minimize the amount of spectrum that will be lost to the proposed spectral mask whenever a return path channel is adjacent to a channel used for outbound transmissions. Depending upon the demand for two-way services generated by educators, wireless cable subscribers and the number of 6 MHz channels required to meet that demand, it may be that entire ITFS channel groups will have to be devoted for return paths.[64/]

Thus, two-way services may only be practical in many cases if an ITFS licensee can provide its entire channel capacity for two-way services and satisfy its minimum ITFS programming obligations utilizing channels other than those for which it is licensed. However, because Section 74.931(e)(9) mandates that each ITFS licensee satisfy the minimum programming requirement using at least one of its own channels, that section effectively precludes such a system configuration. The Petitioners are not suggesting that an ITFS licensee should be forced to shift its programming off of its channels. What they are proposing is that each ITFS licensee be granted the flexibility, in its sole discretion, to shift its ITFS programming to other channels without jeopardizing its license.

[64/] For example, if 42 MHz is required, an operator would presumably use either contiguous channels A1, B1, A2, B2, A3, B3, and A4 or G1, H1, G2, H2, G3, H3 and G4. In either case, an entire four channel group (the A group in the first example and the G group in the second) would be devoted for return paths.

History has shown that when the Commission has afforded ITFS licensees appropriate flexibility in crafting excess capacity leasing arrangements with wireless cable operators, both the ITFS and the wireless cable industry have thrived to the benefit of all concerned. Particularly since the Commission's 1991 decision in General Docket No. 90-54 to liberalize the rules restricting the leasing of excess capacity by ITFS licensees,[65/] the ITFS has flourished. The rules adopted in 1991 permitted ITFS licensees in a given market to schedule their time in such a way that additional virtual full time channels created through the application of channel mapping technology could be made available for lease to a wireless cable operator without reducing the amount of educational, instructional and cultural programming being transmitted. The result has been to make wireless cable commercially viable in markets where such was not previously the case (resulting in the construction of ITFS facilities in markets that previously had none). In addition, subscriber interest in wireless cable has expanded, resulting in increased lease fees paid to lessors of excess ITFS capacity. The rule change proposed by the Petitioners will achieve the same result.

That ITFS has blossomed thanks to wireless cable should come as no surprise to the Commission, which has "acknowledge[d] the role the wireless cable industry has played in reinvigorating the ITFS service."[66/] Indeed, the Commission has correctly concluded that:

[65/] *See Amendment of Parts 21, 43, 74, 78, and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands*, 6 FCC Rcd 6764, 6776 (1991).

[66/] *Amendment of Part 74 of the Commission's Rules Governing Use of the Frequencies in the Instructional Television Fixed Service*, 8 FCC Rcd 2828, 2832 (1993).

> Before the Commission permitted leasing of excess capacity, the spectrum initially allotted for ITFS was so underutilized outside metropolitan areas that the Commission reallocated two entire ITFS channel groups, or eight channels, to MMDS. With the advent of leasing, demand for ITFS channels has surged. Leasing has prompted revenue-sharing arrangements between ITFS licensees and wireless cable operators resulting not only in full use of the spectrum, but in full realization by educators of what was once only an unattainable aspiration: to become actively engaged in a technology that exposes their students to educational and interactive instructional programming previously inaccessible to them.[67/]

As the Commission is well aware, "revenues are key to this ITFS-MMDS partnership."[68/] The Commission is absolutely right when it observes that "leasing channel capacity for the transmission of commercial programming generates revenues that may be vital to the continuing operations of authorized ITFS systems, to the successful deployment in many markets of ITFS service, and to the service's public interest benefits."[69/] In crafting rules to govern the relationship between ITFS licensees and wireless cable operators, the Commission cannot lose sight of the fact that a wireless operator's ability to provide revenue to its ITFS partners is directly related to its ability to compete. Commission rules like Section 74.931(e)(9) that effectively reduce the flexibility ITFS and wireless cable systems jointly have to utilize the ITFS spectrum inevitably reduce the revenue flow that has revitalized the ITFS of late.

[67/] *Channel Loading Report and Order*, 9 FCC Rcd at 3364 (citations and footnotes omitted).

[68/] *Id.*

[69/] *Id.*

The Commission has recognized that "MMDS channels and ITFS channels are interrelated components of an integrated set of channels used to provide nonbroadcast instructional and entertainment programming in a given market"[70/] and that "it is most practicable to view [an ITFS] licensee's group of four ITFS channels as an integral constituent of a market-wide set of channels used to transmit instructional and educational programming."[71/] As a result, the Commission permits ITFS licensees to place their "ready recapture" time on any channel within the wireless cable system, regardless of whether that channel is licensed to the ITFS licensee in question. Simply stated, the Petitioners believe the Commission should extend that policy to the programming transmitted in satisfaction of the minimum programming requirements as a way of opening contiguous channels for two-way services. Specific rule revisions to accomplish that objective are set forth in Appendix B.

III. CONCLUSION

Commissioner Ness had it right recently when she summarized the Commission's goals in managing the spectrum: "We need to be fair, flexible, and fast."[72/] The rules proposed by the Petitioners provide the Commission with a vehicle for achieving those objectives. They are fair, for they put wireless cable on a parity with cable, LMDS, WCS

[70/] *Channel Loading Report and Order*, 9 FCC Rcd at 3364.

[71/] *Id.* at 3365.

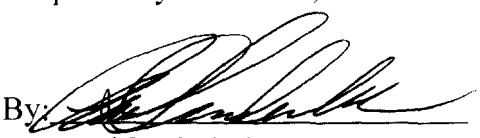
[72/] Hon. Susan Ness, "The End of the Beginning (or "Hoopla")," Special Commissioner's Forum, Wireless'96 Convention (March 25, 1996).

and other two-way services while assuring that interference will not result. They are flexible, for they provide MDS and ITFS licensees with the regulatory freedom they need in order to better serve their constituents. And, they are fast, opening upon the possibility of new wireless cable service offerings without requiring a time-consuming and contentious spectrum reallocation. It was not long ago that the Commission committed to the wireless cable industry that "if modification of our rules become[s] necessary, we will act promptly to ensure that our rules in no way impede the digital future."[73/] By adopting the rules proposed by the Petitioners, the Commission can remove unnecessary regulatory impediments to the most efficient use of digital technology in wireless cable systems.

[73/] *MDS Auction Order*, 10 FCC Rcd at 9606.

WHEREFORE, the foregoing premises considered, the Petitioners respectfully request that the Commission issue a *Notice of Proposed Rulemaking* proposing to adopt the revisions to Parts 21 and 74 set forth in Appendix B.

Respectfully submitted,

By: 

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March 14, 1995